

**REMARKS**

Claims 2-3, 5 and 11-17 are pending. By this Preliminary Amendment, Claims 2, 13 and 17 are amended.

Applicants respectfully submit that no new matter is presented herein.

In view of the above, and in light of the comments provided in the Office Action dated May 30, 2006, Applicants respectfully submit that this Preliminary Amendment, which is filed with a Request for Continued Examination (RCE), places the instant application in condition for allowance.

Prompt and favorable examination on the merits is respectfully requested.

**Claim Objections**

The Office Action dated May 30, 2006 objected to Claims 14-16 under 37 C.F.R. 1.75(c) for allegedly being of improper dependent form for failure to further limit the subject matter of a previous claim. The Office Action required the Applicants to cancel the claims or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form. Applicants respectfully traverse the objection for the following reason(s). Claim 2 recites the first gas diffusion electrode completely defines the fuel gas passage while the second gas diffusion electrode completely define the oxidizing gas passage. Claims 14-16 basically recite the gas diffusion electrodes completely and solely define the corresponding gas passage. As such, while Claims 14-16 specify that the gas passages are only (or solely) defined by the corresponding gas diffusion electrode, due to the "open" nature of the claim, presently pending Claim 2 maintains the broader feature of the gas diffusion electrodes defining more than one gas passage, e.g., a second fuel gas passage or a second oxidizing gas passage.

Therefore, Applicants respectfully submit that dependent Claims 14-16 properly narrow that which is recited by Claim 2. In view of the above, Applicants respectfully request withdrawal of the objection.

**Claim Rejections – 35 U.S.C. §112**

The Office Action rejected Claim 17 under 35 U.S.C. §112, second paragraph. Applicants respectfully traverse the rejection. However, in order to expedite prosecution, Applicants have amended the claim in a manner believed to be responsive to the rejection. Applicants respectfully request withdrawal of the rejection.

**Claim Rejections – 35 U.S.C. §102/103**

The Office Action dated May 30, 2006 rejected Claims 2-3, 5 and 12-17 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,499,663 to Zwick et al. (Zwick). Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Zwick. Applicants respectfully traverse the rejections for the following reasons.

Applicants note that the March 22 Response traversed the rejection of the claims by pointing out that independent Claims 2 and 13 recite a fuel cell including, among other features, the tubular casing comprises high polymer solid electrolytic material surrounding the gas diffusion electrodes and that the electrolyte layer is formed of the high polymer solid electrolytic material. The March 22 Response then argued that Zwick fails to disclose or suggest such a feature. Rather, as shown in Figure 2 of Zwick, the March 22 Response noted that the electrolyte layer (37) extends in a zig-zag type patterns that does not surround the electrodes (30, 32) and that Zwick fails to disclose or suggest high polymer electrolytic material surrounding gas diffusion electrodes.

The Office Action indicated that such arguments were considered not to be persuasive. Rather, in the *Response to Arguments* section of the outstanding May 30 Office Action, it was argued that that Zwick teaches a preferred fuel cell comprises, solely and exclusively, an active anode, cathode, electrolyte and interconnect material, and without any non-active materials for support (see column 4, lines 6-10). The Office Action then noted that Zwick teaches the passageways (2) for fuel are formed only with anode material (3) defining the exposed passageway walls while the passageways (26) for the oxidant are formed only with cathode material (32) defining the exposed passageway walls. The passageway walls may be separated by either or both an electrolyte wall portion (36) or an interconnect wall portion (38) (see column 7, lines 6-19). The Office Action also noted that Zwick teaches the core (14) is comprised solely or exclusively of the active anode, cathode, electrolyte or interconnect materials, respectively (see column 8, lines 39-44). Therefore, the Office Action maintained that Zwick indeed teaches the anode and cathode may be surrounded only by electrolyte material (36).

Furthermore, in the *Claims Analysis* section, the Office Action continues to assert that the leads for electrically connecting the gas diffusion electrodes to an external circuit are indispensable to the present inventive fuel cell.

In view of the above-noted assertion, Applicants note Claims 2 and 13 have been amended to leads that correspond with the description contained in paragraph [0030].

Moreover, Applicants respectfully submit that Zwick does not disclose, teach or suggest each and every feature recited by independent Claims 2 and 13, let alone the additional subject matter recited by the claims depending therefrom.

Applicants respectfully submit that Zwick fails to disclose or suggest the leads are attached to the associated gas diffusion electrodes at respective axial ends of the tubular casing. Rather, Zwick states, see column 8, lines 16-35 and Figs. 1 and 2, that in order to retrieve electric power, "the outermost interconnects (or adjacent cathode or anode) of the series connections are connected electrically via conductors 45 and 46 (illustrated schematically in FIG. 1 and 2) to external terminals 50 and 52 of the fuel cell to provide a cumulative electrical output at the terminals. The conductors 45 and 46 may be connected to the lowermost anode or overlying interconnect material 39L, and the uppermost cathode or interconnect material (not shown)". Thus, Applicants respectfully submit that in Zwick, at least part of the outermost wall of the honeycomb core 14 to which the conductor 45 or 46 contacts must consist of an electroconductive material such as anode/cathode material or interconnect material but not electrolyte material. Therefore, Applicants submit that it is not possible, in Zwick, to provide high polymer electrolytic material surrounding the gas distribution electrodes (anode and cathode), which is a feature recited by Claims 2 and 13.

Applicants also note that in the *Response to Arguments* section on page 6 of the Office Action, several portions of the description in Zwick were cited and asserted as teaching that the anode and cathode may be surrounded by only electrolyte material 36. Applicants respectfully, but strongly, disagree.

For example, column 4, lines 6-10 of Zwick states that "a preferred monolithic honeycomb fuel cell core fabricated according to this invention is comprised solely and exclusively of the active anode, cathode, electrolyte and interconnect materials, and with no nonactive materials for support". The gist of this description is that the

honeycomb core 14 does not comprise nonactive support member, which would be nonproductive and heavy and deteriorate the power and energy density if contained, as described in column 3, lines 49-50. However, the recitation does not teach or suggest surrounding the anode and cathode by only electrolyte material.

Also, column 7, lines 6-14 of Zwick states that "the passageways 20 for the fuel are formed with only anode material 30 defining the exposed passageways walls; while the passageways 26 for the oxidant are formed with only cathode material 32 defining the exposed passageway walls. Adjacent cell passageways 20 and 26 further basically are separated by either or both an electrolyte wall portion 36 and by an interconnect wall portion 38". This description explains the structure of the honeycomb core 14 illustrated in Fig. 2 and only describes how the passageways 20 and 26 can be separated from each other but fails to teach or suggest the electrolytic material surrounding the anode and cathode. As discussed above, if the anode and cathode were surrounded by only electrolyte material in the honeycomb core 14 in Fig. 2 of Zwick, the electric power cannot be transmitted to the external terminals 50 and 52 via the conductors 45 and 46.

Applicants respectfully submit that, for the reasons articulated above, Zwick fails to disclose or suggest each and every feature recited by Claims 2 and 13.

To qualify as prior art under 35 U.S.C. §102, a single reference must teach, i.e., identically describe, each feature of a rejected claim. To establish *prima facie* obviousness, each and every feature recited by a rejected claim must be taught or at least suggested by the applied art of record. See M.P.E.P. §2143.03. As explained above, Zwick does not disclose or suggest each and every feature recited by Claims 2

and 13. Therefore, Applicants respectfully submit Zwick does not anticipate, or render obvious, the invention recited by Claims 2 and 13. As such, Applicants respectfully submit Claims 2 and 13 should be deemed allowable over Zwick.

Applicants note Claims 3, 5, 11-12 and 14-17 depend from Claims 2 and 13. It is respectfully submitted that these dependent claims be deemed allowable at least for the same reasons Claims 2 and 13 are allowable, as well as for the additional subject matter recited therein.

Applicants respectfully request withdrawal of the rejections.

### **Conclusion**

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding objection and rejections, allowance of Claims 2-3, 5 and 11-17, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 101213.00009.**

Respectfully submitted,

  
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